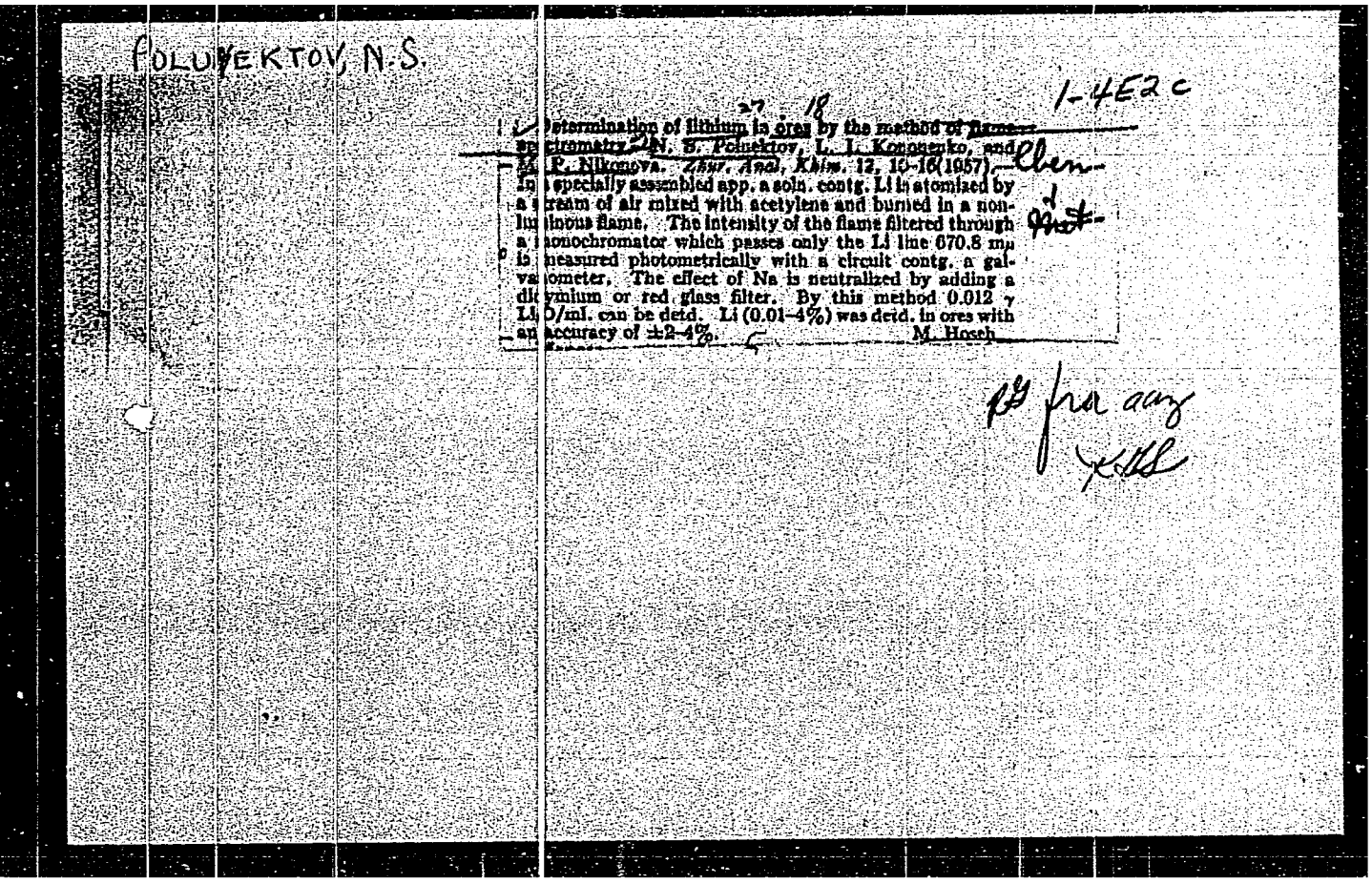
POLUEKTOV, N. S.

"The Use of Radioactive Isotopes in the Study of the Analytical Chemistry of Zircomium and Hafnium," a paper presented at the Atoms for Peace Conference, Geneva, Switzerland, 1955



POLUYEKTOV, N.S.

1-4E2c

Determination of lithium in ores by the method of flame spectrometry. N. S. Poluektov, L. I. Kononenko, and [illegible] P. Nikonova. *Zhur. Anal. Khim.* 12, 10-16(1957).—Chem. Abst.

In a specially assembled app. a soln. contg. Li is atomized by a stream of air mixed with acetylene and burned in a non-luminous flame. The intensity of the flame filtered through a monochromator which passes only the Li line 670.8 mμ is measured photometrically with a circuit contg. a galvanometer. The effect of Na is neutralized by adding a didymium or red glass filter. By this method 0.012 γ Li$_2$O/ml. can be detd. Li (0.01-4%) was detd. in ores with an accuracy of ±2-4%. M. Hosch

pg fra aag
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AUTHORS: Poluektov, N. S., Nikonova, M. P., Leyderman, Ts. A., Lauer, G. S. 75-6-6/23

TITLE: Flame Spectrophotometric Determination of Strontium in Minerals (Opredeleniye strontsiya v rudakh po metodu spektrofotometrii plameni).

PERIODICAL: Zhurnal Analiticheskoy Khimii, 1957, Vol. 12, Nr 6, pp. 699-703 (USSR).

ABSTRACT: By applying a flame spectrophotometer with a monochromator of the type YM-2 with a photomultiplier and a sensitive galvanometer, strontium is determined in two ways:
1 - At a higher content of strontium.
2 - At a strontium-content from 0,1 to 0,001 %.
The line 460,7 mμ with an air-acetylene-flame was used as line of determination. The mineral is first converted into a solution by the disintegration of alkali in order to remove the sulphates. H_3PO_4 has an intensely extinguishing effect. The disturbing aluminum and other elements are removed by precipitation with ammonium hydroxide. The disturbing effect of calcium is eliminated by adding ammonium chloride to the photometric solution. In the case of small

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Flame Spectrophotometric Determination of Strontium in Minerals. 75-6-6/23

quantities of strontium, calcium oxide in a quantity of 30 mg/ml is added to the standard specimen to be analyzed.
The standard solutions were produced with 1, 2, 5, 10, 20, 50, and 100 γ ml SrO.
There are 4 figures, 3 tables, and 13 references, 3 of which are Slavic.

SUBMITTED: April 2, 1957.

AVAILABLE: Library of Congress.

1. Minerals-Stronium determination 2. Flame spectrophalometric-Applications

Card 2/2

POLUYEKTOV, N.S.

AUTHOR POLUYEKTOV, N.S., KONOMENKO, L.I., SURICHAN, T.A., 32-6-6/54
TITLE Complexometrical Titration of Zirconium and Hafnium. (Kompleksometricheskoye titrovaniye tsirkoniya i gafniya-Russian).
PERIODICAL Zavodskaya Laboratoriya, 1957, Vol 23, Nr 6, pp 660-661 (U.S.S.R.)
Received 7/1957 Reviewed 8/1957

ABSTRACT In the present paper it issaid that complexometrical titration of zirconium and hafnium is ussually used in the case of pH=1,5-2,5 with the application (as indicator) of eriochromzianin, chromatozurol or sulphophenolazochromotropic acid. Inverse titration is carried out by the application of trivalent iron in the presence of salicylic acid or benshydroxem acid with pH -sphere 3-7 or by bismuth salts in the presence of tiogarn with pH = 2,0. The amperometric determination of the end of titration is practised. Titration in a highly hydrochloric sphere makes this method more specific. In this case iron(II), trium, titan, tin(IV) molybdenum, niobium, aluminum, calcium, bismuth, copper, nickle, germanium, mercury etc. no longer disturb titration. Iron(III) disturbs and must therefore be previously regenerated, e.g. by means of hydroxilamine boiling. Vanadium also has a disturbing effect. Also tantalium compounds disturb titration because tantalic acid precipitation absorbs the zirconium compounds with the indicator. The same effect is produced by tungsten. Strong oxidising means and regenerators destroy reactively, the presence of nitrate ions in the solution is therefore impossible. Among other

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~~POLYEKTOV, N. S.~~ POLUEKTOV, N. S.

"Reactions of Rare Earth Salts With Rhodizonic Acid."

Rare Earth Elements (Extraction, Analysis, Use), Published by the Institute of Geochemistry and Analytical Chemistry Imeni V. I. Vernadskiy, 1958, Moscow.

(Ukrainian State Institute of Rare Metals), ~~p. 190-191~~.

Poluektov, N.S., [illegible], and [illegible] (Ukrainian Institute for Rare Metals): Utilization of Differential Chromatography On Paper For Approximate Determination of the Composition of Rare Earth Elements 199

COVERAGE: This collection contains reports presented at the June 1956 Conference on Rare Earth Elements at the Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy of the Academy of Sciences USSR. The articles treat chemical methods of separating rare earth mixtures, methods of processing rare earth ores, ion exchange chromatography, chemical analysis, and some industrial applications of rare earths. Aside from contributing authors, the editors mention the following Soviet scientists who are studying rare earth elements, rare earth deposits, extraction methods, and the preparation of oxides and salts: Martynov, Mel'nikov, Khrushchov, Melikov, Pisarzhevskiy, Chernyak, Tananaev, Beloussov, Zhukov and especially, S. A. Orlov, who first obtained the majority of rare earth elements in the pure state, separated many complex molecular compounds of these elements, and determined their specific properties. References are given at the end of each article.

AUTHORS: Poluektov, N. S., Nikonova, M. P., Vitkun, R. A. 75-1-7/26

TITLE: The Determination of Sodium and Potassium in Minerals With the Aid of Flame Spectrophotometry (Opredeleniye natriya i kaliya v mineralakh po metodu spektrofotometrii plameni)

PERIODICAL: Zhurnal Analiticheskoy Khimii, 1958, Vol 13, pp 48-55 (USSR).

ABSTRACT: In an earlier paper the authors worked out instructions for the flame-photometric determination of lithium, rubidium and cesium (refs. 1,2). In the flame-photometric determination of elements in solutions the mutual influence of the elements and the composition of the solutions have to be taken into account, as the intensity of the radiation of the element to be investigated is thereby influenced. In the present paper the authors investigated the published data on the mutual influence of the elements (refs. 10-16) in order to be able to work out a suitable course of the analysis. For the determination of sodium and potassium they used a flame spectrophotometer which was built upon a universal monochrometer of the type YM -2 this device is of

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The Determination of Sodium and Potassium in Minerals
With the Aid of Flame Spectrophotometry

high sensitivity and specificity for the determination of sodium and potassium. For recording radiation in sodium determination they used a photomultiplier of the type ФЭУ-19, in potassium determination of the type ФЭУ-22. The photoelectric current was measured by means of a refleching galvanometer of the type ФМ. The atomizer and the burner for the work with an illuminating gas flame are illustrated and described.

In order to characterize the usefulness of the apparatus for the determination of sodium and potassium in the presence of other elements the authors determined the "factor of specificity" (ref. 1). This means the number indicating how many times higher the concentration of a foreign element must be in order to cause the same deflection of the galvanometer as the element to be determined at a concentration 1oγ per ml. These factors of specificity are relative to the wave lengths of the radiation of the metal to be investigated (in the case of sodium 589-59o mμ, in the case of potassium 76o-77o mμ). Results are given. Corresponding to the content of the samples of sodium and potassium (up to 1o%) the conditions for a determination of sodium at concentra-

The Determination of Sodium and Potassium in Minerals With the Aid of Flame Spectrophotometry

tions of up to 100 γ Na per ml for illuminating-gas flames and acetylene flames were examined. A linear dependence of the radiation intensity on the concentration exists only up to 10 γ Na per ml. Therefore the samples in the ranges between 10 and 100 γ Na/ml are compared with 2 standard solutions the concentrations of which are similar to those of the sample. The influence of accompanying elements upon the intensity of the radiation of sodium and potassium in illuminating-gas flames and acetylene flames was investigated. Based on these investigations conditions for the determinations of these metals with a higher accuracy were found.

By the determination of potassium it was found that the degree of the ionization of potassium is decisive for the intensity of radiation. The concentration of the ionized potassium atoms is obtained from the equation:

$$\frac{[K^+][e^-]}{[K]} = \text{const.}$$

Card 3/5 where $[K]$, $[K^+]$ and $[e^-]$ are the concentrations of the potassium

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The Determination of Sodium and Potassium in Minerals With the Aid of Flame Spectrophotometry

atoms, potassium ions and the electrons in the flame. Based on this equation the following rules governing the mutual intensification of the radiation intensity in alkali metals are obtained: Metals easy to ionize (rubidium, cesium) cause a higher effect than metals worse to ionize (lithium), as they more intensively disturb the equilibrium by a high increase in the concentration of the electrons. 2. The intensifying action of other metals is highest at low concentrations of potassium, because a comparatively large portion of potassium atoms is ionized then. 3. The intensification of the radiation of potassium on addition of another metal in increasing concentrations tends toward a limit which is given by the complete ionization of potassium and which is the faster attained the lower the ionization potential of the added metal. 4. The intensification effect of radiation is higher in flames in which a larger part of the atoms is ionized. This is the case in flames with very high temperatures. On the basis of these investigations instructions for the determination of sodium and potassium in minerals were worked out which are accurately given here. The method permits the determination of contents of every individual alkali metal from 0,4-3,0°/o with an accuracy of ±3°/o.

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The Determination of Sodium and Potassium in Minerals With the Aid of Flame Spectrophotometry

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There are 5 figures, 6 tables, and 16 references, 2 of which are Slavic.

ASSOCIATION: Institute of General and Inorganic Chemistry, Academy of Sciences of the Ukrainian SSR, Laboratories in Odessa (Russian Text not Given)

SUBMITTED: December 17, 1956.

AVAILABLE: Library of Congress.

1. Sodium - Determination 2. Potassium - Determination
3. Flame spectrophotometers - Applications

Card 5/5

SOV/75-13-4-3/29

AUTHORS: Poluektov, N. S., Kononenko, L. I., Lauer, R. S.

TITLE: Photometric Determination of Tantalum, Boron, Indium, and Rhenium in Extracts (Ekstraktsionno-fotometricheskoye opredeleniye tantala, bora, indiya i reniya)

PERIODICAL: Zhurnal analiticheskoy khimii, 1958, Vol.13, Nr 4, pp.396-401 (USSR)

ABSTRACT: Recently suggested methods for the determination of a series of metals are based on the photometric determination of colored extracts $A_n.Me.X_m$ (A- organic dye; Me - metal to be determined; X - halogen). These extracts contain the metal to be determined as salt of a complex halogen acid with a basic dye. The same dye is a suitable reagent for a number of metals, the necessary selectivity is obtained by selection of the halogen, the acidity of the solution and other reaction conditions. When elaborating new extraction-photometric methods, the existing parallels between the extractability of simple or complex halogen acids according to the oxonium-mechanism (Ref 8) and that of salts of organic bases have to be considered. Thus the complex chlorides of metals which can be extracted as salts of organic bases are extracted by diethyl ether or other oxy-

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Photometric Determination of Tantalum, Boron, Indium, and Rhenium in Extracts

gen containing solvents, whereas simple or complex acids of elements which can be extracted according to the oxonium-mechanism are also extracted by solvents that do not contain an organically bound oxygen (arsonium-compounds). For elements, the acids of which can be extracted according to the oxonium-mechanism or as salts of arsonium-compounds, conditions can be found under which the same acids can also be extracted as salts of organic dye bases. Acids which are difficult to extract according to the oxonium-mechanism can, however, not be extracted by dyes. Thus As(III), Sb(III), Ge(IV), Te(IV), and other substances which can be extracted by diethyl ether from a hydrochloric solution (Ref 14) cannot be extracted by benzene as salts of rhodamine under similar conditions. This is due to the fact that the concentration of the rhodamine base is much lower than the concentration which can be attained with the solvent in the extraction according to the oxonium-mechanism. In order to demonstrate their line of thought, the authors elaborated new extraction-photometric methods for determining tantalum, boron, indium, and rhenium. Tantalum and boron are extracted by benzene in the presence of hydrofluoric acid as salts of the methyl violet; the determination of the colored solutions

Photometric Determination of Tantalum, Boron, Indium, and Rhenium in Extracts

after the extraction was carried out on photoelectric colorimeters of the type ФЭК-М. Indium can be extracted in the presence of hydrobromic acid as salt of the rhodamine C by benzene; and rhenium can be extracted by ethyl acetate from a neutral solution as a per-rhenate of methyl violet. The determination of the colored solutions of both of these elements was carried out on "Pulfrich"-photometers. The procedure used in these four determinations is described in detail and a list of interfering foreign ions and errors of determination is given. There are 3 figures, 6 tables, and 21 references, 5 of which are Soviet.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN USSR, laboratorii v g. Odesse (Institute of General and Inorganic Chemistry, AS Ukr SSR, Odessa Laboratories)

SUBMITTED: March 4, 1957

POLUEKTOV, N.S.; KISELEVA, N.K. [diceased].

Color reactions of gallium and indium salts with organic reagents [with summary in English]. Zhur. anal. khim. 13 no.5:555-561 S-O '58. (MIRA 11:10)

1. Institut obshchey i neorganicheskoy khimii AN USSR, laboratorii v Odesse.

(Gallium) (Indium)

5(2)

AUTHORS: Poluektov, N. S., Nikonova, M. P. SOV/75-13-6-2/21

TITLE: On the Mutual Influence of Elements on the Radiation Intensity in a Flame (O vzaimnom vliyanii elementov na intensivnost' izlucheniya v plameni) Communication I. Two Sprayers Technique (Soobshcheniye I. Primeneniye tekhniki dvukh raspyliteley)

PERIODICAL: Zhurnal analiticheskoy khimii, 1958, Vol 13, Nr 6, pp 635-642 (USSR)

ABSTRACT: The mutual influence of alkali metals on the radiation in a flame has been found by several authors already (Refs 3-12) and may be explained by ionization processes of the metal atoms in the flame. The equilibrium between atoms, ions and electrons is therein established: $\frac{P_{metal^+} \cdot P_{e^-}}{P_{metal}} = K$ (Refs 13,14), where P is the corresponding partial pressure. On the introduction of another ionizing metal into the flame the partial pressure of the electrons increases which involves a decrease of P_{metal^+} and an increase of P_{metal}. By this

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effect all known rules can be explained which are related to a mutual intensification of the radiation of alkali metals in the flame. The cause of a decrease of the radiation intensity of an alkali metal in the presence of another one lies in the variation of the dissociation degree of metal salts on the addition of large amounts of other metal salts (Ref 4). The dissociation of a metal halide must obey the law of mass action: $\frac{P_{metal} \cdot P_X}{P_{metalX}} = K.$ P is again the corresponding partial pressure. By addition of further halogen atoms P_X is increased and P_{metal} accordingly decreased which causes a decrease of the radiation intensity of the element in the flame. This effect is denoted as "anion effect". It does not only occur with alkali metal salts, but also with acids and their ammonium salts (Ref 15). This effect depends on the nature of the acid and on its concentration and attains maximum intensity in phosphoric acid (Ref 17). A further

On the Mutual Influence of Elements Upon the Radiation Intensity in a Flame. Communication I. Two Sprayers Technique

SOV/75-13-6-2/21

effect is the formation of compounds between metal oxides. It effects the elimination of the radiation of alkaline-earth metals in the presence of a sufficient quantity of aluminum salts (Ref 17). This effect can be used for the determination of traces of alkali metals in the presence of alkaline-earth metals (Refs 21,22). This effect is due to the formation of stable difficultly volatile compounds of low thermal conductivity (e.g. $CaAl_2O_4$), which cannot evaporate when passing through the flame (Refs 22-24). The authors of the present paper investigated the mechanisms of the influence of foreign substances upon the intensity of the radiation of alkali metals and alkaline-earth metals in the flame. On the basis of the effects described the mechanism of this interaction is different in different cases. The experimental studies were performed by means of a device in which the two solutions were sprayed in separated sprayers and then conducted to one common torch. This device is illustrated and described in the paper. It permitted the experimental confirmation

On the Mutual Influence of Elements Upon the Radiation Intensity in a Flame. Communication I. Two Sprayers Technique

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of the mechanisms - assumed in the paper - for the action on the radiation intensity of elements in the flame exerted by foreign substances. There are 2 figures, 5 tables, and 24 references, 6 of which are Soviet.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN USSR, laboratorii v Odesse (Institute of General and Inorganic Chemistry, AS UkrSSR, Laboratories at Odessa)

SUBMITTED: June 3, 1957

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POLUEKTOV, N.S.; NIKONOVA, M.P.

Determining small amounts of alkali metals in cesium salts by means of flame photometry. Zav. lab. 24 no.5:528-531 '58. (MIRA 11:6)

1. Institut obshchey i neorganicheskoy khimii Akademii nauk USSR.
(Cesium--Analysis) (Alkali metals--Analysis)
(Photometry)

Poluektov, N. S.

5(2) PHASE I BOOK EXPLOITATION SOV/2402

Akademiya nauk SSSR. Institut geokhimii i analiticheskoy khimii

Redkozemel'nyye elementy; polucheniye, analiz, primeneniye (Rare Earth Elements; Production, Analysis, and Use) Moscow, Izd-vo AN SSSR, 1959. 331 p. 5,000 copies printed.

Resp. Ed.: D. I. Ryabchikov, Professor; Eds. of Publishing House: D. N. Trifonov and T.G. Levi; Tech. Ed.: S. G. Markovich; Editorial Board: I. P. Alimarin, Corresponding Member, USSR Academy of Sciences, I. N. Zaozerskiy, Doctor of Chemical Sciences, R. V. Kotlyarov, Candidate of Chemical Sciences, V. I. Kuznetsov, Doctor of Chemical Sciences, M. M. Senyavin, Candidate of Chemical Sciences, and Yu. S. Sklyarenko, Candidate of Chemical Sciences.

PURPOSE: This book is intended for chemists in general and for geochemists and analytical chemists in particular.

COVERAGE: This collection of articles consists of reports presented at the Rare Earth Elements Symposium held in June 1956 at the Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy. The book may be divided into three sections: the characteristics, uses and production of rare earth elements (REE); the methods of analyzing REE; and the application of individual rare earth elements and REE mixtures in the glass and metallurgical industries, and their use as catalysts. Considerable space is devoted to the application of ion-exchange chromatography in the production of pure forms of all rare earth elements. The combination of this method with other methods in separating REE on an industrial scale are discussed by D. I. Ryabchikov, Yu. S. Sklyarenko, and M. M. Senyavina. Classical methods of separating REE compounds are discussed by I. N. Zaozerskiy (who is said to be the first in the USSR to develop methods of processing REE), V. P. Kotlyarov, L. F. Andreyeva, A. V. Nikolayev, and G. P. Aleksandrov. Quantitative X-ray spectral analytical methods are described by E. Ye. Vaynshteyn, and chemical methods of analysis by I. P. Alimarin and F. I. Pavlotskaya. The determination of REE impurities in pure products and atomic materials are discussed at length in three articles by A. N. Zaydel' and his associates. All articles are accompanied by photographs, diagrams, tables, and bibliographic references.

24(4) PHASE I BOOK EXPLOITATION SOV/2795

Poluektov, N. S. NIKOLAY SERGEYEVICH

Metody analiza po fotometrii plameni (Methods of Analysis By Flame Photometry) Moscow, Goskhimizdat, 1959. 230 p. Errata slip inserted. 4,000 copies printed.

Ed.: M. M. Farafonov; Tech. Ed.: Ye. G. Shpak.

PURPOSE: This book is intended for workers in chemical analysis laboratories, industrial firms, and scientific research institutions.

COVERAGE: This book describes methods of analysis by flame photometry. It presents the theoretical principles of the various methods, describes the design and arrangement of the necessary equipment, and gives in detail the rules of procedure. It is stated that this method is suitable for rapid qualitative detection and quantitative determination of

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5(4) SOV/32-25-3-2/62

AUTHORS: Poluektov, N. S., Nikonova, M. P.

TITLE: On the Relation Between Radiation Intensity and the Concentration of Alkali Metals in the Flame-photometric Method (O zavisimosti mezhdu intensivnost'yu izlucheniya i kontsentratsiyey shchelochnykh metallov pri plamenno-fotometricheskom metode)

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 3, pp 263-268 (USSR)

ABSTRACT: A thorough investigation into the shape of the so-called concentration curves (cc) in flame-photometric analyses of alkali metals was carried out because the inclination of the Rb 780 mμ line is in contrast with the theory. The shape of the (cc) was determined in illuminating gas-air flames (1700° C) and acetylene-air flames (2090° C). A spectrophotometer (with a UM-2 monochromator and FEU-19 and FEU-22 photomultipliers) which has already been described (Refs 9-10) was used. The working method is described. The measurements were repeated for several times and the functional diagrams lg I of lg C were drawn from the mean values. In the illuminating gas flame (Fig 2) an increase in the inclination of the curve may be

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observed at small concentrations of K, Rb, and Cs (Table 1). In comparison to the illuminating gas flame the curves for K, Rb, and Cs which were obtained in the acetylene flame have another shape (Fig 3). For a more precise determination of the changes in the inclination of the (cc) the angular coefficient for each section of the curve in the range of from 10^{-2} to $5 \cdot 10^{-5}$ mol was calculated (Table 1). It was found that at concentrations of $10^{-3} - 10^{-4}$ mol the angle of inclination increases and $tg \alpha = 1.4$ for K and Rb and 1.55 for Cs. The unproportionally strong decrease in the line intensity at a reduction of the concentration is explained in reference 11 by the influence exercised by ionization. According to this assumption it is found that in the case of strong ionization the line intensity is proportional to the square of the concentrations of the atoms which are put into the flame ($tg \alpha = 2$), while in the case of a weak ionization the radiation intensity is directly proportional to the concentration ($tg \alpha = 1$). In the intermediate range $tg \alpha$ changes from 2 to 1. The difference between the (cc) in the acetylene and

illuminating gas flame is explained by a comparison of the ionization constants (Table 2) calculated according to the formula given in reference 8 and the partial pressure of the metal atoms. There are 7 figures, 2 tables, and 12 references, 5 of which are Soviet.

ASSOCIATION: Laboratoriya Instituta obshchey i neorganicheskoy khimii AN USSR (Laboratory of the Institute of General and Inorganic Chemistry of the AS UkrSSR)

SOV/32-25-4-2/71

5(2)
AUTHORS: Lauer, R. S.; Poluektov, N. S.

TITLE: Microvolumetric Chromatographic Method for the Determination of Individual Elements of Rare Earths in Their Mixtures (Mikroob"yemnyy khromatograficheskiy metod opredeleniya individual'nykh redkozemel'nykh elementov v ikh smesi)

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 4, PP 391-396 (USSR)

ABSTRACT: Subsequent to preliminary investigations a method was worked out which is based on a paper chromatography of a rhodanide-containing acetone-ether mixture. The chromatogram (Figure) shows that the elements are arranged by ascending atomic indices, the Rf-value being slightly dependent on the working time, temperature, and other factors (Table 1 shows the Rf-values of some rare earths). The position of individual elements is fixed by wetting with a urotropin-containing alcoholic alizarin solution. The volumetric microdetermination of individual elements is done complexometrically with the indicator arsenazo (Refs 5,30). By the described method, a determination of lanthanum (Table 2), of some preparations with 2-3 elements of rare earths (Table 4), and of artificial mixtures of oxides of the elements of rare

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Microvolumetric Chromatographic Method for the Determination of Individual Elements of Rare Earths in Their Mixtures

earths (Table 5) was carried out, and the sensitivity of the method was established with 1-2% R_2O_3 in the mixture. A list of the necessary reagents and devices is given as well as a description of the course of analysis, and a table of the conversion factors from La_2O_3 to oxides of other rare earths (Table 3).

There are 1 figure, 5 tables, and 31 references, 12 of which are Soviet.

ASSOCIATION: Laboratoriya Instituta obshchey i neorganicheskoy khimii Akademii nauk USSR (Laboratory of the Institute of General and Inorganic Chemistry of the Academy of Sciences, UkrSSR)

5(2)

AUTHORS: Poluektov, N. S., Kononenko, L. I. SOV/32-25-5-7/56

TITLE: Determination of Rhenium in Molybdenites With the Colorimetric Method (Opredeleniye reniya v molibdenitakh kolorimetricheskim metodom)

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 5, pp 548-550 (USSR)

ABSTRACT: The present paper gives a description of a colorimetric rhenium determination based on the use of a catalytic reaction with tin chloride (I) and sodium tellurate (II) (Refs 9, 10). (I) does not effect the reduction of (II) in acid solutions. In the presence of perrhenates, however, (I) has a catalytic effect upon the reaction Na_2TeO_4 + 3 $SnCl_2$ + 8 HCl $\longrightarrow$ Te + 3 $SnCl_4$ + 2 NaCl + 4 H_2O, in which connection elemental tellurium is formed. The amount of Te formed as well as the color intensity of the solution increases with time and further depend on the concentration of the reagents, on temperature, etc. Under observance of the conditions prescribed, the method under review allows up to 0.001 γ Re to be determined colorimetrically

Determination of Rhenium in Molybdenites With the Colorimetric Method

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after 20 hours (in the case of 0.01 γ Re, a waiting time of from 1 to 1.5 hours will be sufficient). Molybdenum, which gives the same reaction, may be "masked" by tartaric acid, or it may be extracted as oxyquinolate with chloroform. The separation from the principal amount of Mo takes place by roasting with a CaO + $Ca(NO_3)_2$ mixture, in which connection Mo remains unsolved as Ca-molybdate in water dissolution, while Re remains in solution up to 92-94%, as was found by the aid of Re^{186}. Sodium tellurate, which is required for the analysis of molybdenites is prepared from elemental Te according to a method described. The course of analysis is given and shows inter al that colorimetric measurement takes place with a photocolorimeter FEK-M, and the Re content is determined with an equation on the basis of the extinction of the solution. Analytical results obtained with molybdenites and molybdenum concentrations (Table 1) as well as from ores with Rhenium content (Table 2) are given. There are 2 tables and 10 references, 6 of which are Soviet.

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Lab. of Inst. of General & Inorganic Chem. AS UkR SSR.

5 (2)

AUTHORS: Lauer, R. S., Poluektov, N. S.

SOV/32-25-8-3/44

TITLE: Determination of Tantalum Impurities in Zirconium, Hafnium, and Niobium

PERIODICAL: Zavodskaya laboratoriya, 1959, Vol 25, Nr 8, pp 903 - 905 (USSR)

ABSTRACT: The authors and L. I. Kononenko (Ref 1) applied a method for the determination of tantalum (I) in the metals zirconium (II), hafnium (III), and niobium (IV) which is based on the fact that (I) can be determined photometrically-quantitatively by the coloring of the benzene extract of fluortantalate of methyl violet (M). This determination is not disturbed by (II), (III), and small quantities of (I). It was established that the most complete extraction of (I) is achieved at a 0.3 n concentration of hydrofluoric acid with benzene, with the addition of 0.04% of (M) and at pH 2.3. (II) is not extracted and the small quantities of simultaneously extracted (IV) can be re-extracted with 0.3 n hydrofluoric acid which contains (M). At the re-extraction a small quantity of (I) is also extracted (Table 1) and this fact has to be taken into consideration when plotting the calculation diagram. The article contains two processes of

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Determination of Tantalum Impurities in Zirconium, Hafnium, and Niobium SOV/32-25-8-3/44

analysis - for (II) and (III) and for (IV). Three samples of metallic (II), one of (III) and two of (IV) were analyzed according to the described method (Table 2); at these processes (I) was added to the solved samples (Table 3). The sensitivity of the (I)-determination is stated to be $2.5 \cdot 10^{-4}$% for (II) and (III), and $5 \cdot 10^{-2}$% for (IV). There are 3 tables and 1 Soviet reference.

ASSOCIATION: Laboratoriya Instituta obshchey i neorganicheskoy khimii Akademii nauk USSR (Laboratory of the Institute of General and Inorganic Chemistry of the Academy of Sciences, UkrSSR)

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5(2) SOV/32-25-9-8/53

AUTHORS: Kononenko, L. I., Poluektov, N. S.

TITLE: Colorimetric Determination of Zirconium in Ores Containing Phosphates

PERIODICAL: Zavodskaya laboratoriya, 1959, Vol 25, Nr 9, pp 1050-1053 (USSR)

ABSTRACT: A colorimetric method, based upon a previously described method (Ref 1), for the determination of zirconium, was elaborated, intended, however, for ores containing phosphates. Zirconium is separated as the phosphate, the phosphate dissolved in oxalic acid, and zirconium is precipitated with NaOH as the hydroxide. The latter is dissolved in hydrochloric acid and a colorimetric determination with arsen azo, or alizarin red is made. The completeness of phosphate precipitation and Zr was investigated by means of Hf^{181} (as it reacts like Zr), and it was found that Zr as the phosphate precipitates up to 95-98% only with an acidity of the medium above 3.5n HCl (Table 1). The degree of separation of Zr from tantalum and niobium was investigated by means of Ta^{182} and Nb^{95} and it was found that

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Colorimetric Determination of Zirconium in Ores Containing Phosphates

the separation from Nb is complete, whereas a part of Ta dissolves with Zr, without, however, disturbing the Zr determination since Trilon B is used (Table 2). For the purpose of colorimetric determination a green and orange-colored filter should be used in the colorimeter of the type FEK-M, which does not have a yellow filter. An orange-glass OS-12 may be used. Zr determinations of ore samples were carried out according to the course of analysis mentioned (Table 3), with certain Zr quantities being added to the samples (Table 4). It was possible to determine of from a few hundredths to 2 per cent ZrO_2 in the samples. There are 4 tables and 4 references, 2 of which are Soviet.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii Akademii nauk USSR (Institute of General and Inorganic Chemistry of the Academy of Sciences, UkrSSR)

POLUEKTOV, N.S.

PHASE I BOOK EXPLOITATION SOV/4443

Akademiya nauk SSSR. Komissiya po analiticheskoy khimii

Metody opredeleniya primesey v chistykh metallakh (Methods of Determining Admixtures in Pure Metals) Moscow, 1960. 411 p. (Series: Its: Trudy, 12) 3,500 copies printed.

Resp. Eds.: A.P. Vinogradov, Academician, and D.I. Ryabchikov, Doctor of Chemical Sciences; Ed. of Publishing House: N.P. Volynets; Tech. Ed.: T.V. Polyakova.

PURPOSE: This collection of articles is intended for chemists, metallurgists, and engineers.

COVERAGE: The articles describe methods for detecting and determining various admixtures and their traces in pure metals. Also discussed are many chemical, physicochemical, electrochemical, spectrochemical and luminescence methods of analyzing materials of high purity. The editors state that these methods have been developed within the last five or six years by various Soviet scientific institutes, and are now widely used in research and factory laboratories of the Soviet Union. No personalities are mentioned. References, mostly Soviet, accompany each article.

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POLUEKTOV, N. S., Doc Chem Sci -- (diss) "Research into the field of the theory of flame-photometry method and its application in the analysis of rare elements." Moscow, 1960. 34 pp; (Academy of Sciences USSR, Inst of Geochemistry and Analytical Chemistry im V. I. Vernadskiy); 150 copies; price not given; list of author's work at end of text (15 entries); (KL, 22-60, 131)

POLUEKTOV, N.S

17

PHASE I BOOK EXPLOITATION SOV/5747

Vsesoyuznoye soveshchaniye po redkim shchelochnym elementam. 1st, Novosibirsk, 1958.

Redkiye shchelochnyye elementy; sbornik dokladov soveshchaniya po khimii, tekhnologii i analiticheskoy khimii redkikh shchelochnykh elementov, 27-31 yanvarya 1958 g. (Rare Alkali Elements; Collection of Reports of the Conference on the Chemistry, Technology, and Analytical Chemistry of Rare Alkali Elements, Held 27-31 January, 1958) Novosibirsk, Izd-vo Sibirskogo otd. AN SSSR, 1960. 99 p. 1000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Sibirskoye otdeleniye. Khimiko-metallurgicheskiy institut.

Resp. Ed.: T. V. Zabolotskiy, Candidate of Technical Sciences; Members of Editorial Board: A. S. Mikulinskiy, Professor, Doctor of Technical Sciences, A. T. Logvinenko, Candidate of Technical Sciences, F. F. Barkova, Candidate of Chemical Sciences; Ed.: V. M. Bushuyeva; Tech. Ed.: A. F. Mazurova.

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Rare Alkali Elements; Collection (Cont.) SOV/5747

PURPOSE : This book is intended for chemical engineers and technicians working in metallurgical and mining operations and related enterprises.

COVERAGE: The collection contains reports which deal with the physical and analytical chemistry of rare alkali elements and their compounds and their reactions with mineral ores and salts. Methods of extraction and modern analytical techniques and equipment are also discussed. No personalities are mentioned. References accompany individual articles.

TABLE OF CONTENTS:

KONONENKO, L.I.; POLUEKTOV, N.S.

Determination of small quantities of zirconium in ores. Trudy Kom. anal. khim. 12:132-141 '60. (MIRA 13:8)
(Zirconium) (Colorimetry)

5.5310

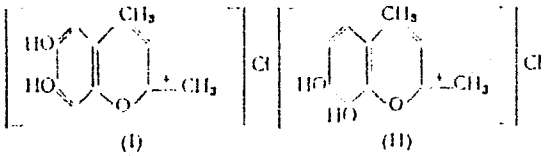
77/50
SOV/15-15-1-12/29

AUTHORS: Kononenko, L. I., Poluektov, N. S.

TITLE: Photometric Determination of Germanium Using o-Dihydroxychromenols

PERIODICAL: Zhurnal analyticheskoy khimii, 1960, Vol 15, Nr 1, pp 61-68 (USSR)

ABSTRACT: The four compounds given were synthesized and tested as reagents for spectrophotometric determination of germanium:



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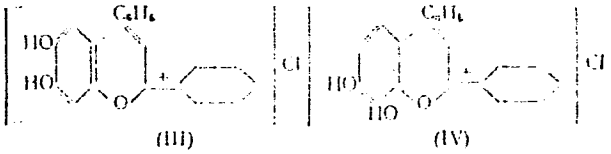
Photometric Determination of Germanium Using o-Dihydroxychromenols

77750
SOV/75-15-1-12/29



(III) (IV)

6,7-dihydroxy-2,4-dimethylbenzopyrillium chloride (I)
7,8-dihydroxy-2,4-dimethylbenzopyrillium chloride (II)
6,7-dihydroxy-2,4-diphenylbenzopyrillium chloride (III)
7,8-dihydroxy-2,4-diphenylbenzopyrillium chloride (IV)

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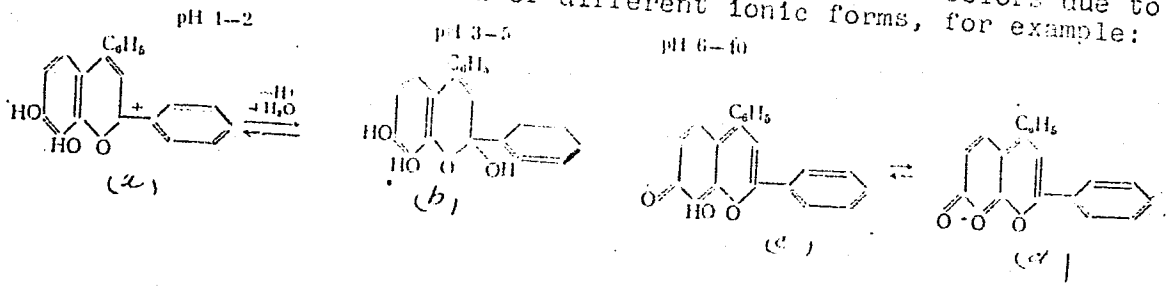
Photometric Determination of Germanium
Using o-Dihydroxychromenols

77750
SOV/75-15-1-12/29

Depending on pH, they produce different colors due to the formation of different ionic forms, for example:



(a) Cation of IV, orange-red; (b) base or, (c) dehydrated base of IV, blue; (d) anion of dehydrated base of IV, violet.

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Acid germanium solutions (0.1N HCl) produce color changes with the above reagents (see Table 2).

Table 2. Color change of acid dyes solution on addition of germanium

Reagent	color in 0.1N HCl	color after addition of germanium
I	pale yellow	bright yellow
II	orange	red
III	yellow	orange red
IV	orange	dark green

They produce similar color also on addition of the following elements: Zr, Hf, Ti, Th, Mo, W, V, Ta, Nb, and Sn. The reagents (I, II, III, IV) were obtained according to the method of Bulow, C., Sicherer,

Photometric Determination of Germanium Using o-Dihydroxychromenols

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W., Ber., 34, 3916 (1901). Reagents I and II form colored complexes with Ge, which are soluble in water. Reagents III and IV form colored complexes with Ge, insoluble in water, but the complexes can be held in the solution by the addition of gelatin. Conditions of the complex formation, stability of the color, effect of time and acid concentration on the optical densities of the colored Ge complexes were studied. The optical densities were measured using SF-4 spectrophotometer or FM-1 photometer, also photoelectric colorimeter FEK-M can be used. Other details and results of the experiments are shown in the tables and figures which follow.

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Photometric Determination of Germanium Using o-Dihydroxychromenols .

77750
SOV/75-15-1-12/29

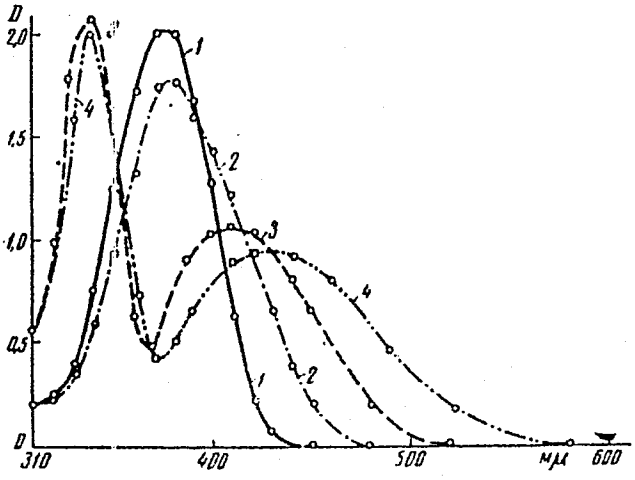

Fig. 1. Absorption curve of I (1); complex of I with Ge (2); compound II (3); complex of II with Ge (4).

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Photometric Determination of Germanium Using o-Dihydroxychromenols

77750
SOV/75-15-1-12/29

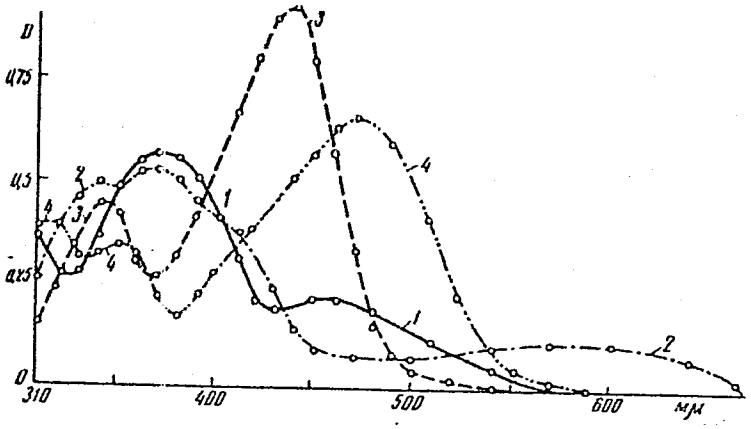

Fig. 2. Absorption curves of solutions: compound III (1); complex of III with Ge(2); compound IV (3); complex of IV with Ge (4).

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(a)	(b)	(c)	(d)		(g)	(h)
			(e)	(f)		
I	420	0,1 —0,6	(a')	—	1	100
II	500—530	0,05—0,2	(j)	—	2	100
III	500	0,1 —0,6	(k)	0,5 ml	0,1	25
IV	600—630	0,05—0,2	(l)	0,5 ml	1	40

Table 3. Conditions of germanium determination using compounds I, II, III, IV (a) reagent; (b) wavelength (μm); (c) optimum concentration of HCl (N); (d) amount of reagent added for 10 ml of solution; (e) reagent; (f) 1% gelatin solution; (g) sensitivity of the method in γ (in 10 ml solution); (h) maximum of Ge γ (in 10 ml of solution, obeying Beer's law; (i) 2 ml of 0.2% aqueous solution; (j) 0.5 ml of 1% aqueous solution, 0.5 of 0.2% aqueous solution;

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(Caption to Table 3 continued)

(k) 0.5 ml of 0.2% alcoholic solution; (m) 0.5 ml of 0.2% alcoholic solution.

Table 4. Conditions of determination of composition of the colored compounds of Ge with reagents I, II, III, IV. (a) reagent; (b) total concentration of the component, M; (c) acidity of the solution based on HCl N, (d) alcohol concentration, %; (e) gelatin concentration, %.

(a)	(b)	(c)	(d)	(e)
I	$2 \cdot 10^{-2}$	0,5	—	—
II	$2 \cdot 10^{-2}$	0,1	—	—
III	$2 \cdot 10^{-3}$	0,1	1,0	0,04
IV	$2,5 \cdot 10^{-3}$	0,2	1,0	0,04

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S/075/60/015/02/01/004
B005/B006

AUTHORS: Poluektov, N. S., Popova, S. B., Ovchar, L. A.

TITLE: A Recording Flame Spectrophotometer and Its Use

PERIODICAL: Zhurnal analiticheskoy khimii, 1960, Vol. 15, No. 2, pp. 131-137

TEXT: Flame spectrophotometers using monochromators of the type УМ-2 (UM-2) (Refs. 1,2) or attachments type СФ-4 (SF-4) (Ref. 3) have several disadvantages for flame-photometric determination of elements in high dilution which are described in the introduction to the present paper. In a previous paper, (Ref. 7), the authors described a recording spectrophotometer with increased spectrum range for the determination of certain rare-earth metals. In the present paper, an instrument of the same type is applied for determining several other elements. Apparatus applied and mode of operation are described in detail. The spectrophotometer consists of a universal monochromator type УМ-2 (UM-2) connected with a mechanism for turning the wave-length drum (Fig. 1) and

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A Recording Flame Spectrophotometer and Its Use

S/075/60/015/02/01/004
B005/B006

an electronic recording potentiometer type ПС-1-02 (PS-1-02). A Figure illustrates the circuit diagram of the cathode follower applied. The anode of a photomultiplier type ФЭУ-19 (FEU-19) (for elements with bands in the visible range or type ФЭУ-22 (FEU-22) (for the infrared range) was connected to the grid of the cathode follower. The accuracy of determinations depends on the ratio of the records for the background and the peaks of the lines. Table 1 shows the deviations in the record of lithium lines (at various concentrations) in the presence of large amounts of sodium. It is evident that the recording photometer described guarantees a much higher accuracy than it is attainable by measurements involving galvanometer readings. In the present paper, a detailed description of flame-photometric determination of the following elements is given: lithium in NaCl, rubidium in the presence of large amounts of potassium, calcium impurities in strontium salts and salts of rare-earth metals (with two Tables of analytical data), strontium in sea water, and manganese in presence of large amounts of potassium. Lines recorded by the spectrophotometer in the above six determinations are shown in six Figures. The recording spectrophotometer described in this paper has

Card 2/3

POLUEKTOV, N.S.; VITKUN, R.A.; OVCHAR, L.A.

Relation between radiation intensity and the concentration of 18 elements in the flame-photometric method of analysis. Zhur.anal.khim. 15 no.3:264-271 My-Je '60. (MIRA 13:7)

1. Institute of General and Inorganic Chemistry, Academy of Sciences, Ukrainian S.S.R., Laboratories in Odessa.
(Flame photometry)

S/075/60/015/004/012/030/XX
B020/B064

AUTHORS: Poluektov, N. S. and Popova, S. B.

TITLE: On the Mutual Influence of the Elements Upon the Intensity of Radiation in a Flame. Communication 2. Compounds Formed in the Extinction of Calcium and Strontium Radiation With Aluminum, Zirconium, and Uranium Salts

PERIODICAL: Zhurnal analiticheskoy khimii, 1960, Vol. 15, No. 4, pp. 437 - 442

TEXT: An extinguishing influence upon the radiation intensity of Ca and Sr exert, apart from Al, mainly Zr, Be, V, Th, Ti, U, and Cr, which is said to be due to the formation of compounds of the mixed oxides of these elements, and the alkaline-earth metals in the flame, which reduces the concentration of the atoms Ca and Sr in the gases of the flame and the intensity of their radiation. By using two atomizers supplying one flame, the authors showed that the most probable reason for the reduction of the luminous power of Ca and Sr by Al salts is the formation of difficultly volatile compounds of Al_2O_3, CaO, and SrO in the flame at the moment of

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On the Mutual Influence of the Elements Upon the Intensity of Radiation in a Flame. Communication 2. Compounds Formed in the Extinction of Calcium and Strontium Radiation With Aluminum, Zirconium, and Uranium Salts

S/075/60/015/004/012/030/XX
B020/B064

evaporation of one drop of aerosol of the analyzed solution. The luminous power of Ca and Sr is not reduced if the aluminum salt is introduced into the flame by a different atomizer. To investigate the composition of the compounds forming between Ca (Sr) and Al, or other extinguishing elements, the method of isomolar series according to Ostromyslenskiy-Job was used, the reduction of the luminous power of the element in the flame being chosen as characteristic value of the formation of the compound. The flame spectrophotometer previously described, which consists of a universal monochromator of the УМ-2 (UM-2) type, a photomultiplier of the types ФЭУ-19 (FEU-19) and ФЭУ-22 (FEU-22), a mirror galvanometer, and an acetylene- and propane-butane-air flame were applied. The mode of interaction between Ca and Sr salts, as well as Zr and U salts was photometrically determined (Table 1). Table 2 shows the composition of the solutions used to determine the composition of the Sr-Zr compound. The curve of the ratio between the atomic numbers of the metals in the Sr-Zr compound is plotted (Fig. 1) on the basis of the photometric results; the photoelectric current is recorded in percent of the maximum

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On the Mutual Influence of the Elements Upon the Intensity of Radiation in a Flame. Communication 2. Compounds Formed in the Extinction of Calcium and Strontium Radiation With Aluminum, Zirconium, and Uranium Salts

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B020/B064

as a function of concentration. Table 3 gives the calculation technique for the Ca-Zr compounds with the help of various correction factors. Fig. 3 gives the diagrams obtained from the composition of the compounds of Ca and Sr with Al. The maximum in Fig. 4 (as well as in Figs. 1 and 2) corresponds to a molar ratio of Ca(Sr):Zr = 1:1 (for nitrates). Thus, the compounds in the flame are likely to have the compositions $CaZrO_3$ and $SrZrO_3$. In $CaCl_2$ and zirconium solutions (Fig. 5) the maximum of the curve lies, in the case of a propane-butane flame, at a ratio of Ca:Zr=3:2, where $Ca_3Zr_2O_7$ is likely to be formed, while the curve shows no distinct maximum in the case of the hotter acetylene flame. With Ca and U, compounds of different compositions form, while with Sr and U, compounds with a molar ratio of Sr:U = 3:2, but also 1:1 and 2:1 are formed (Figs. 6,7). There are 7 figures, 3 tables, and 16 references: 5 Soviet, 1 Swedish, 4 German, 3 US, 1 Japanese, and 2 British.

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On the Mutual Influence of the Elements Upon the Intensity of Radiation in a Flame. Communication 2. Compounds Formed in the Extinction of Calcium and Strontium Radiation With Aluminum, Zirconium, and Uranium Salts

S/075/60/015/004/012/030/XX
B020/B064

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN USSR, Laboratorii v Odesse (Institute of General and Inorganic Chemistry of the AS UkrSSR, Odessa Laboratories)

SUBMITTED: May 23, 1959

Card 4/4

POLUEKTOV, N.S.; NIKONOVA, M.P.; GRINZAYD, S.E.

Determination of lithium and cesium in ores by the use of a flame photmeter with an integrator. Zav.lab. 26 no.2:161-163 '60. (MIRA 13:5)

1. Laboratoriya Instituta obshchey i neorganicheskoy khimii Akademii nauk USSR.
(Lithium--Analysis)
(Cesium--Analysis)
(Photometers)

S/073/60/026/002/012/015
B023/B067

AUTHORS: Kononenko, L. I. and Poluektov, N. S.

TITLE: Application of o-Dihydroxy Chromenols for the Colorimetric Determination of Zirconium and Hafnium

PERIODICAL: Ukrainskiy khimicheskiy zhurnal, 1960, Vol. 26, No. 2, pp. 246-253

TEXT: To examine the applicability of dihydroxychromenols for the colorimetric determination of zirconium and hafnium the authors studied four representatives of this group

6,7-dihydroxy-2,4-dimethyl benzopyranol chloride
7,8-dihydroxy-2,4-dimethyl benzopyranol chloride
6,7-dihydroxy-2,4-diphenyl benzopyranol chloride
and 7,8-dihydroxy-2,4-diphenyl benzopyranol chloride

The authors found that these reagents are less efficient than arsenazo and alizarin red produced earlier as to the specifity of determination. 6,7-dihydroxy-2,4-diphenyl benzopyranol, however, has a higher sensitivity

Card 1/3

Application of o-Dihydroxy Chromenols for the Colorimetric Determination of Zirconium and Hafnium

S/073/60/026/002/012/015
B023/B067

and therefore may be used for detecting zirconium and hafnium traces. The colored zirconium and hafnium complexes contain two molecules of the reagent bonded to one metal atom (zirconium or hafnium). The authors determined the apparent formation constants of zirconium and hafnium complexes as well as the molecular extinction coefficients according to the following equation: $MeO^{2+} + 2HA \rightleftharpoons MeOA_2 + 2H^+$ and according to the formulas $K_{formation} = \frac{1-\alpha}{\alpha^3 \cdot C^2}$; $\varepsilon = \frac{E}{C \cdot l}$, where α denotes the degree of dissociation of the complex with stoichiometric ratio of the components; C - concentration of metal ions, E - maximum extinction value, ε - molar extinction coefficient, and l length of the bulb. The authors proved that the reagents described can also be used for determining zirconium in phosphate ores if zirconium is first isolated as phosphate. Table 3 shows the values of the apparent formation constant of the four reagents. There are 8 figures, 5 tables, and 20 references: 10 Soviet, 1 US, and 1 Japanese.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN USSR, laboratoriya v Odesse (Institute of General and Inorganic Chemistry AS UkrSSR, Laboratory in Odessa)

Card 2/3

Application of o-Dihydroxy Chromenols for the Colorimetric Determination of Zirconium and Hafnium

S/073/60/026/002/012/015
B023/B067

SUBMITTED: March 13, 1959

Card 3/3

BOLUEKTOV, N.S.; VITKUN, R.A.

Mutual effect of elements on the intensity of radiation in a flame. Part 3: Composition of the compounds formed during the quenching of radiation from calcium and strontium by molybdenum, vanadium, and titanium. Ukr. khim. zhur. 26 no.5:648-652 '60. (MIRA 13:11)

1. Institut obshchey i neorganicheskoy khimii AN USSR.
(Calcium compounds--Spectra)
(Strontium compounds--Spectra)

S/032/60/026/008/026/046/XX
B020/B052

AUTHORS: Poluektov, N. S., and Ovchar, L. A.

TITLE: Anion Effect in the Determination of the Elements of Rare Earths by the Method of Flame Photometry

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol. 26, No. 8, pp. 964-966

TEXT: The effects of acids and salts on the results of flame photometry were investigated. The authors used a spray apparatus, an acetylene - air flame, and a spectrophotometer with automatic recording of the spectrum, which was equipped with a monochromator of type УМ-2 (UM-2), a photomultiplier of type ФЭУ-19М (FEU-19M) and ФЭУ-22 (FEU-22), and an automatically recording potentiometer ЭПП-09 (EPP-09). Fig. 1 gives graphical representations of the dependence log I = φ(log C) for the molecule bands of yttrium 613 mμ. From the data obtained one may conclude that the addition of nitrates into the flame does not cause the quantitative evaporation of yttrium from the aerosol particles. This is due to the formation of a difficultly volatile oxide during the evaporation of the solution. The photometry of the spectra of the sulfate solutions of rare earths

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Anion Effect in the Determination of the Elements of Rare Earths by the Method of Flame Photometry

[illegible]/032/60/026/008/026/046/XX
[illegible]/B052

showed that the peak of the molecular bands of LaO [illegible] mμ has the same intensity as that in the spectrum of the chloride solu[illegible]n. As compared to the bands of $EuCl_3$, those of europium at 459.6 mμ are [illegible]eaker by approximately 60%. The molecular band intensities of YO 61[illegible] μ, ErO 498 mμ, and Yb 398.8 mμ are practically reduced to zero. Addi[illegible]s of chlorides, sulfuric acid, and sulfates to the solutions, [illegible] cause the radiation extinction of the rare earths. The method of the two spray apparatus (Ref. 7) was used for the explanation of the extinction mechanism. The experiments showed (see Table) that sulfuric acid extincts the radiation only when it is contained in a solution containing also chlorides of rare earths. The formation of difficultly volatile compounds during the evaporation of aerosol particles is probably caused by sulfuric acid. Phosphoric acid has the same effect as sulfuric acid and reduces the intensity of the spectra of the rare earths. The modified method of isomolar series was applied for determining the composition of the difficultly volatile compounds formed. Figs. 2 and 3 give the dependence of ΔI on the composition of the solution. ΔI characterizes the extinction of the band intensity or

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S/032/60/026/010/023/035
B016/B054

AUTHORS: Poluektov, N. S., Ovchar, L. A., Kuchment, M. M., and Nikol'skiy, M. A.

TITLE: The Use of a Spectrophotometer СФ-4 (SF-4) for the Purposes of Flame Photometry

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol. 26, No. 10, pp. 1152-1154

TEXT: Spectrophotometers with automatic scanning of the spectrum and spectrum recording offer special advantages in flame photometry. The following instruments are produced in the USSR: ИСП-51 (ISP-51) with an accessory instrument ФЭП-1 (FEP-1), ПС-384 (PS-384), and the spectrophotometers СП-61 (SP-61), ДФС-4 (DFS-4), and ДФС-14 (DFS-14). Their suitability for flame analysis has, however, not yet been clarified. Previously (Ref. 5), the authors had described a recording instrument which was constructed on the basis of a universal monochromator УМ-2 (UM-2). This instrument is particularly suited for the determination of some individual rare-earth elements. The authors designed an

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The Use of a Spectrophotometer СФ-4 (SF-4) for the Purposes of Flame Photometry

instrument of a similar type having quartz optics and permitting the determination of elements on the basis of lines of the ultraviolet part of the spectrum. For this purpose, they used a spectrophotometer for absorption measurements СФ-4 (SF-4). The photocells were replaced by photomultipliers ФЭУ-18 (FEU-18) for the visible and ultraviolet spectrum range, as well as ФЭУ-22 (FEU-22) for the infrared range. The output of the photomultiplier was led into the cathodic repeater which was connected with the input of the electronic recording potentiometer ПС1-02 (PS1-02). The photomultipliers were fed by a high-voltage rectifier ВСЭ-2500 (VSE-2500). Fig. 1 shows a block diagram of the apparatus. The revolving mechanism for the drum of the wavelength scale is shown in Fig. 2. Table 1 gives the times required for adjusting the picture of the spectral line to the exit slit (0.1 mm) for different wavelengths. Table 2 shows the sensitivity of determination for individual elements. Table 3 shows the reproducibility of line-recording for copper and magnesium. The attainable accuracy is higher than that of ordinary spectrophotometers. The design suggested guarantees determination of various elements with high accuracy. There are 3 figures, 3 tables, and 5 references, 1 Soviet and 4 US.

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The Use of a Spectrophotometer СФ-4 (SF-4) for the Purposes of Flame Photometry

S/032/60/026/010/023/035
B016/B054

ASSOCIATION: Institut obshchey i neorganicheskoy khimii Akademii nauk USSR
(Institute of General and Inorganic Chemistry of the Academy of Sciences UkrSSR)

Card 3/3

POLUEKTOV, N.S.

PHASE I BOOK EXPLOITATION SOV/5777

Vinogradov, A. P., Academician, and D. I. Ryabchikov, Doctor of Chemical Sciences, Professor, Resp. Eds.

Metody opredeleniya i analiza redkikh elementov (Methods for the Detection and Analysis of Rare Elements) Moscow, Izd-vo AN SSSR, 1961. 667 p. Errata slip inserted. 6000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo.

Ed. of Publishing House: M. P. Volynets; Tech. Ed.: O. Gus'kova.

PURPOSE: This book is intended for analytical chemists and for students of analytical chemistry.

COVERAGE: The handbook was published in accordance with a decision of the Vsesoyuznoye soveshchaniye po analizu redkikh elementov (All-Union Conference on the Analysis of Rare Elements) called

Card 1/5

Methods for the Detection (Cont.)

together by the Gosudarstvennyy nauchno-tekhnicheskiy komitet Soveta Ministrov SSSR (State Scientific and Technical Committee of the Council of Ministers of the USSR) and the Academy of Sciences USSR in December, 1959. The material is arranged in accordance with the group position of elements in the periodic system, and each section is prefaced by an article discussing the analytical methods most used in the Soviet and non-Soviet countries. Each section deals with the physical, physicochemical, and chemical methods for the analysis of raw materials, semi-products, and pure metals, and is accompanied by an extensive bibliography listing works published in the field in recent years. The following are mentioned for their help in preparing the book for publication: I. P. Alimarin, G. N. Bilimovich, A. I. Busev, E. Ye. Vaynshteyn, M. P. Volynets, V. G. Goryushina, A. M. Dymov, S. V. Yelinson, O. Ye. Zvyagintsev, G. M. Kolosova, Ye. K. Korchemnaya, V. I. Lebedev, G. A. Malofeyeva, B. N. Melent'yev, V. A. Nazarenko, I. I. Nazarenko, T. V. Petrova, N. S. Poluektov, A. I. Ponomarev, V. A. Ryabukhin, N. S. Stroganova, and Yu. A. Chernikhov.

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Methods for the Detection (Cont.) SOV/5777

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12-1-61

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POLUEKTOV, N.S.; KONONENKO, L.I.

Spectrophotometric study of carbonate complexes of rare earth elements. Zhur.neorg.khim. 6 no.8:1837-1842 Ag '61. (MIRA 14:8)

1. Institut obshchey i neorganicheskoy khimii AN USSR.
(Rare earth carbonates--Spectra)

POLUTEKTOV, N.S.; VITKUN, R.A.

Increase of the radiation intensity of metals in a flame as a result of the quenching of ionization. Zhur.anal.khim. 16 no.3:260-267 My-Je '61. (MIRA 14:6)

1. Institut obshchey i neorganicheskoy khimii AN USSR, Laboratorii v Odesse.

(Alkali metals--Spectra)

POLUEKTOV, N.S.

Atomic absorption flame photometry. Zav.lab. 27 no.7:830-836 '61. (MIRA 14:7)

1. Institut obshchey i neorganicheskoy khimii AN USSR.
(Flame photometry)

LAUER, R. S.; POLUEKTOV, N. S., doktor khim. nauk

Determination of the hafnium oxide content of a mixture of zirconium and hafnium oxides based on the measurement of the intensity of beta rays. Khim. prom.[Ukr.] no.1:76-79 Ja-Mr '62. (MIRA 15:10)

1. Institut obshchey i neorganicheskoy khimii AN UkrSSR (laboratorii v Odesse).

(Hafnium oxide) (Zirconium oxide) (Beta rays)

KONONENKO, L.I.; POLUEKTOV, N.S.

Phenanthroline complexes of rare earth elements in solutions. Zhur. neorg. khim. 7 no.8:1869-1873 Ag '62. (MIRA 16:6)

(Rare earth compounds)
(Phenanthroline)

S/075/62/017/007/003/006
B119/B186

AUTHORS: Mishchenko, V. T., and Poluektov, N. S.

TITLE: Spectrophotometric determination of rare earths in solutions of ethylene diamine tetraacetic complexes

PERIODICAL: Zhurnal analiticheskoy khimii, v. 17, no. 7, 1962, 825 - 830

TEXT: When rare earths are converted to their ethylene diamine tetraacetic complexes other elements present in the analytic solution with a view to spectrophotometric determination have a disturbing effect: the possibility to eliminate this effect was explored. The absorption spectra of Pr, Nd, Sm, Eu, Gd, Dy, Ho, Er, Tu, and Yb complexes in aqueous solution were investigated. As compared with the spectra of non-complex-bound elements, most of these spectra show a 1 - 6 mμ shift of the absorption maxima toward longer wavelengths. The height of absorption maxima of complexes is 1.1 - 2.6 times that of the maxima of free ions. A complexone III concentration of 0.1 mole/liter, and a pH of 8 - 9, were found to be optimum for investigations with rare earth contents of up to 10 mg/ml (referring to their oxides). A method with a sensitivity of 0.03 mg/ml for Pr_6O_{11}

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Spectrophotometric determination...

and Nd_2O_3 and 0.07 mg/ml for Sm_3O_2 was developed for determining Pr, Nd, and Sm. Pr is measured at 448 mμ, Nd at 526.5 or 747.5 mμ, Sm at 404 and 418 mμ. The error width is much reduced by the presence of NH_4NO_3 when determining Pr, Nd, and Sm, and by ammonium acetate when determining Nd. There are 5 figures and 3 tables. The most important English-language reference is: T. Moeller, J. C. Brantley, Analyt. Chem. 22, 433 (1950).

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN USSR, laboratorii v Odesse (Institute of General and Inorganic Chemistry AS UkrSSR, Laboratories in Odessa)

SUBMITTED: October 13, 1961

POLUEKTOV, N.S.; VITKUN, R.A.

Atomic absorption flame photometric determination of cadmium. Zhur.anal. khim. 17 no.8:935-939 N '62. (MIRA 15:12)

1. Institut of General and Inorganic Chemistry, Academy of Sciences, Ukrainian S.S.R., Laboratories in Odessa.
(Cadmium--Analysis) (Flame photometry)

POLUEKTOV, N.S.; GRINZAYD, S.E.

Atomic absorption photometry of a flame. Izv. AN SSSR. Ser. fiz. 26 no.7:948-949 Jl '62. (MIRA 15:8)
(Photometry) (Flame)

S/032/62/028/007/001/011
B179/B101

AUTHORS: Kononenko, L. I., and Poluektov, N. S.

TITLE: Complexometric determination of Hf in an Hf-Zr mixture

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 7, 1962, 794 - 796

TEXT: Direct titration of Hf in an Hf-Zr mixture with trilon is described, thereby contrasting with L. Ottendorfer (Chemist-Analyst, 48, no. 4, 97, 105 (1959)). Sulfonaphthol azoresorcin (4-sulfo-2-hydroxy naphthalene-1-azo-4'-1',3'-dihydroxy benzene) or picramin azochromotrope were used as indicators, making it possible to carry out the titration in the presence of disturbing foreign ions (up to 200-250 mg SO_4^{2-}, 100 mg Sn(II), Sn(IV), Fe(II). In the Hf(Zr) - trilon complex there is 1 atom of metal in 1 molecule of trilon. In mixtures containing 2.5 - 98% Hf the latter could be determined with a maximum error of ± 0.5%. There are 2 tables.

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S/032/62/028/007/001/011
B179/B101

Complexometric determination...

ASSOCIATION: Institut obshchey i neorganicheskoy khimii Akademii nauk USSR (Institute of General and Inorganic Chemistry of the Academy of Sciences UkrSSR)

Card 2/2

POLUEKTOV, N.S.

Flame photometric method of analysis (survey). Zav. lab. 28 no.9:1069-1072 '62. (MIRA 16:6)

(Flame photometry)
(Spectrophotometry)

POLUEKTOV, N.S.; OVCHAR, L.A.

Extraction of rare-earth elements as ternary salicylate-pyridine complexes. Trudy Kom.anal.khim. 14:154-159 '63. (MIRA 16:11)

POLUEKTOV, N.S.; VITKUN, R.A.

Atomic-absorption determination of mercury by flame photometry. Zhur. anal. khim. 18 no.1:37-42 Ja '63. (MIRA 16:4)

1. Institute of General and Inorganic Chemistry, Academy of Sciences, Ukrainian S.S.R., Laboratories in Odessa.
(Mercury—Analysis) (Flame photometry)

L 16616-63

S/075/63/018/004/003/015

AUTHOR: Zelyukova, Yu. V. and Poluektov, N. S. 45

TITLE: Atomic absorption analysis with use of the exhaust gases of a flame

PERIODICAL: Zhurnal analiticheskoy khimii, v. 18, no. 4, April 1963, 435-439

TEXT: Using atomic absorption spectrophotometry, the authors study the life duration of free atoms for 10 metals in the exhaust gases of a propane-butane-air flame, establishing that free atoms of a number of metals exist outside the flame zone. The study affirms the possibility of the atomic absorption determination of copper, silver, gold and cadmium in the exhaust gases of a flame; here, sensitivity is increased by 5-13 times. There are 3 figures and 2 tables. The English-language sources read as follows: Walsh, A., Spectrochim. acta, 7, 108 (1955); Elwell, W. T., Gridley, J. A. F., Atomic Absorption Spectrophotometry, Oxford, 1961; Allan, J. E., Spectrochim, acta, 18, 259 (1962).

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN USSR, Laboratorii

Card 1/2

Atomic absorption analysis .....
v Odesse (The Institute of General and Inorganic Chemistry, Academy of Sciences, Ukrainian SSR; Laboratories in Odessa)

POLUEKTOV, N.S.; GRINZAYD, S.E.

Device for the atom-absorption spectrophotometry of a flame. Zav. lab. 29 no.8:998-1000 '63. (MIRA 16:9)

1. Institut obshchey i neorganicheskoy khimii AN UkrSSR.
(Flame photometry) (Spectrophotometry)

POLUEKTOV, N.S.; TSERKASEVICH, K.V.

Complexes of rare earth elements with gallic acid. Zhur. neorg. khim. 9 no.7:1606-1612 Jl '64. (MIRA 17:9)

1. Institut obshchey i neorganicheskoy khimii AN UkrSSR, laboratoriya v Odesse.

POLUEKTOV, N.S.; KONONENKO, L.I.; VITKUN, R.A.; NIKONOVA, M.P.

Quenching europium luminescence in crystals of chelate compounds in the presence of other rare earth elements. Opt. i spektr. 17 no.1:73-77 Jl '64. (MIRA 17:9)

L 9804-66 EWT(m)/EWP(j)/T/EWP(t)/EWP(b) IJP(c) JD/JG/GS/RM

ACC NR: AT5026379 SOURCE CODE: UR/0000/65/000/000/0096/0106

55
54
B+1

AUTHOR: Poluektov, N.S.; Kononenko, L. I.

55

ORG: None

TITLE: Fluorometric methods of determining individual rare earth elements 27

55

SOURCE: AN SSSR. Institut geokhimii i analiticheskoy khimii. Sovremennyye metody analiza; metody issledovaniya khimicheskogo sostava i stroyeniya veshchestv (Modern methods of analysis; methods of investigating the chemical composition and structure of substances), 96-106

TOPIC TAGS: rare earth element, analytic chemistry, fluorescence, electron transition, cerium, samarium, europium, terbium, dysprosium, lanthanum, yttrium, lutetium

ABSTRACT: The fluorometric method makes possible the solution of some specific problems in the analysis to determine the individual rare earth elements in their compounds, and it is particularly sensitive with respect to several of the elements. Existing fluorometric methods make use of either the fluorescent capabilities of ions of rare earth elements, or of the fluorescence of the organic part of the molecule of the complex formed with a suitable reagent. The present review deals mainly with methods which employ fluorescence related to the electron transitions in the 4f-shell. It is shown that the methods discussed are at present applicable for the determination of Ce, Sm, Eu, Tb, and Dy. The development of methods

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L 15304-66 EWT(m)/ETC(f)/EWG(m)/EWP(j)/T/EWP(t)/EWP(b) IJP(c) RDW/JD/RM
ACC NR: AP6002810 SOURCE CODE: UR/0078/66/011/001/0093/0098

AUTHORS: Tserkasevich, K. V.; Yefryushina, N. P.; Poluektov, N. S. 52 B

ORG: Institute of General and Inorganic Chemistry of Academy of Sciences UkrSSR, Odessa Laboratories (Institut obshchey i neorganicheskoy khimii Akademii nauk UkrSSR, Laboratorii v Odesse) 44,55

TITLE: Complexes of neodymium, holmium, and erbium with pyrogallosulfonic acid 55,27 55,27 55,27

SOURCE: Zhurnal neorganicheskoy khimii, v. 11, no. 1, 1966, 93-98

TOPIC TAGS: rare earth metal, holmium compound, erbium compound, neodymium compound, complex molecule/ LP-58 potentiometer, SF-10 recording spectrophotometer

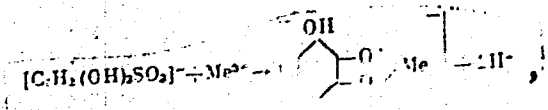
ABSTRACT: Formation of Nd, Ho, and Er complexes with pyrogallosulfonic acid (I) was investigated by using potentiometric and spectrophotometric methods. Results of potentiometric titration, performed with potentiometer LP-58 and glass electrodes, are summarized in graphs. Spectrophotometric study of the reaction was conducted in neutral as well as in strongly alkaline (1 N KOH) media and was performed on a recording instrument SF-10. From the data obtained by both methods, the authors concluded that in the neutral medium, with reagent ratio M(metal):I = 1:1, the reac-

Card 1/2 UDC: 546.665-38+546.666-38+546.657-38

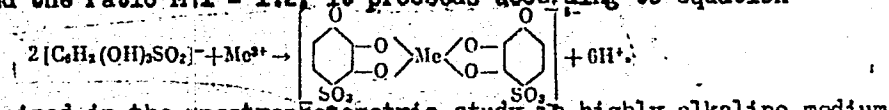
L 15304-66

ACC NR: AP6002810

tion follows equation



while at pH 14 and the ratio M:L = 1:2, it proceeds according to equation



From the data obtained in the spectrophotometric study in highly alkaline medium it was possible to calculate the apparent reaction constants K. Orig. art. has: 9 figures, 2 tables, and 2 equations.

SUB CODE: 07/ SUBM DATE: 08Jun64/ ORIG REF: 006/ OTH REF: 006

Card 2/2 mc

L 14687-66 EWT(m)/EWP(t)/EWP(b) IJP(c) JD/JG
ACC NR: AP6005880 SOURCE CODE: UR/0075/65/020/010/1073/1081

AUTHOR: Mishchenko, V. T.; Lauer, R. S.; Yefryushina, N. P.; Poluektov, N. S. 50 B

ORG: Institute of General and Inorganic Chemistry, AN UkrSSR, Odessa Laboratories (Institut obshchey i neorganicheskoy khimii AN UkrSSR, Laboratorii v Odesse)

TITLE: Extractive-photometric determination of certain rare earth elements with thenoyltrifluoroacetone 27,55

SOURCE: Zhurnal analiticheskoy khimii, v. 20, no. 10, 1965, 1073-1081

TOPIC TAGS: rare earth element, photometric analysis, benzene, complex molecule, praseodymium, neodymium, samarium, dysprosium, holmium, erbium, thulium, ytterbium, absorption spectrum

ABSTRACT: A method of determining rare earth elements from their absorption spectra in solutions of complex compounds in organic solvents is described. It was found that complexes with thenoyltrifluoroacetone were suitable for extractive-photometric determination of rare earths in benzene solutions. Analysis of the absorption spectra of thenoyltrifluoroacetone complexes of praseodymium, neodymium, sama-

Card 1/2

Card 2/2 BC

MISHCHENKO, V.T.; LAUER, K.S.; YEFRYUSHINA, N.P.; POLUEKTOV, N.S.

Extraction-photometric determination of some rare-earth elements with tenoyltrifluoroacetone. Zhur. anal. khim. 20 no.10:1073-1081 '65. (MIRA 18:11)

1. Institut obshchey i neorganicheskoy khimii AN UkrSSR, Laboratorii v Odesse.

TISHCHENKO, M.A.; LAUER, R.S.; POLUEKTOV, N.S.

Extraction of mandelic acid salts of rare-earth elements by butanol. Zhur.nerog.khim. 10 no.8:1925-1928 Ag '65. (MIRA 19:1)

1. Institut obshchey i neorganicheskoy khimii AN UkrSSR, laboratorii v Odesse. Submitted April 12, 1963.

L 16746-66 EWT(m)/EWP(j)/T/EWP(t) IJP(c) JD/JG/RM
ACC NR AP6003636 SOURCE CODE: UR/0078/65/010/010/2275/2281

AUTHOR: Poluektov, N. S.; Mishchenko, V. T.

34
B

ORG: none

TITLE: Mixed sulfosalicylate complexes of rare earth elements

SOURCE: Zhurnal neorganicheskoy khimii, v. 10, no. 10, 1965, 2275-2281

TOPIC TAGS: terbium compound, europium compound, lanthanum compound, neodymium compound, erbium compound, yttrium compound, fluorescence spectrum, spectrophotometry

ABSTRACT: The formation of mixed polynuclear complexes (rare earth complexes) with sulfosalicylic acid in neutral and weakly alkaline media was studied by spectrophotometric and fluorometric methods. The absorption spectra of sulfosalicylate solutions of neodymium and erbium change in the presence of such complexes of other rare earths (yttrium and lanthanum were employed). The greatest change is observed in absorption bands having peaks at λ = 575.5 mm (Nd) and 523.0 nm (Er) in chloride solutions. These bands were used in the study. The data obtained for the properties of complexes studied spectrophotometrically pertain to the pH range of 5.5-9.5. It was found that in a mixed sulfosalicylate

UDC: 546.65 : 541.49

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KONONENKO, L.I.; TISHCHENKO, M.A.; VITKUN, R.A.; POLUEKTOV, N.S.

1,10-Phenanthrolinetenoyltrifluoroacetone complexes of rare-earth elements. Zhur.neorg.khim. 10 no.11:2465-2470 N '65. (MIRA 18:12)

1. Submitted April 13, 1964.

KONONENKO, L.I.; MELENT'YEVA, Ye.V.; VITKUN, R.A.; POLUEKTOV, N.S.

Rare earth complexes with acetylacetone and 1,10-phenanthroline or 2,2'-dipyridyl. Ukr. khim. zhur. 31 no.10:1031-1035 '65.
(MIRA 19:1)

1. Institut obshchey i neorganicheskoy khimii AN UkrSSR, Laboratorii v Odesse. Submitted May 9, 1964.

MISHCHENKO, V.T.; LAUER,R.S.; YEFRYUSHINA, N.P.; POLUEKTOV, N.S.

Absorption-spectrophotometric determination of rare-earth elements in tributyl phosphate extracts. Ukr. khim. zhur. 31 no. 11:1189-1197 '65 (MIRA 19:1)

1. Institut obshchey i neorganicheskoy khimii AN UkrSSR.

TSERKASEVICH, K.V.; YEFRYUSHINA, N.P.; POLUEKTOV, N.S.

Complex compounds of neodymium, holmium, and erbium with pyrogallolsulfonic acid. Zhur.neorg.khim. 11 no.1:93-98 Ja '66. (MIRA 19:1)

1. Institut obshchey i neorganicheskoy khimii AN UkrSSR, Laboratorii v Odesse. Submitted June 8, 1964.

L 47204-66 EWT(m)/EWP(j) RM

ACC NR: AP6027191 (N) SOURCE CODE: UR/0078/66/011/008/1883/1886

AUTHOR: Lauer, R. S.; Yefryushchina, N. P.; Poluektov, N. S.

ORG: Odessa Laboratories, Institute of General and Inorganic Chemistry, Academy of Sciences, Ukrainian SSR (Laboratorii v Odesse, Institut obshchey i neorganicheskoy khimii Akademii nauk Ukrainskoy SSR)

TITLE: Complexes of rare earth elements with ascorbic acid

SOURCE: Zhurnal neorganicheskoy khimii, v. 11, no. 8, 1966, 1883-1886

TOPIC TAGS: ascorbic acid, rare earth compound, spectrophotometric analysis,

ABSTRACT: Complexes formed by rare earth elements with ascorbic acid in aqueous solutions were studied spectrophotometrically and potentiometrically and also by separating the complexes in solid form and analyzing them chemically. Complex formation begins at pH > 3, reaches a maximum around pH 6, and remains constant up to pH 6.5-6.7. The complexes have the composition Me:ascorbic acid = 1:1. The apparent constants of formation undergo little change from one rare earth element to the next and are small, indicating a low stability of the complexes. Data on isomolar series, potentiometric titration and analysis of the solid complexes lead to the formula $MeO(C_6H_7O_6)\cdot 2H_2O$ for their composition. Boiling of the rare earth salts in the presence of a large excess of ascorbic acid (5% solution) precipitates elements of the cerium subgroup (La, Ce, Pr, Nd) at pH 4-10 (most completely at pH 6-6.5), while elements of the yttrium sub-

Card 1/2 UDC: 547.475.2'165-386

Card 2/2 fv

L 07924-67 EWT(m)/EWP(t)/ETI IJP(c) JD/JG

ACC NR: AP6033386 SOURCE CODE: UR/0075/66/021/008/1018/1020

35
B

AUTHOR: Kirillov, A. I.; Lauer, R. S.; Poluektov, N. S.

ORG: Odessa Laboratories, Institute of General and Inorganic Chemistry, AN UkrSSR (Laboratorii v Odesse, Instituta obshchey i neorganicheskoy khimii AN UkrSSR)

11

TITLE: Fluorimetric determination of yttrium in a mixture of rare earths after their separation by paper chromatography

SOURCE: Zhurnal analiticheskoy khimii, v. 21, no. 8, 1966, 1018-1020

TOPIC TAGS: rare earth, chromatography, paper chromatography, yttrium, yttrium determination, yttrium nitrate, fluorimetric method, fluorimetry

ABSTRACT: A rapid fluorimetric method has been developed for the semiquantitative determination of yttrium in chromatographic zones after separation of rare earths by means of partition paper chromatography. The yttrium content is evaluated by the direct fluorimetry of the part of the chromatogram where the yttrium zone is located after the chromatogram has been treated by a phenyl salicylate solution. The method has been checked on neodymium nitrate solutions (25 mg/ml) containing

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